

REMARKS

Claims 1-5, 7-12 and 14-29 are pending in the application, claims 6 and 13 having been canceled herein, claims 15-29 having been added. Reconsideration in view of the following remarks is kindly requested.

REJECTION UNDER 35 U.S.C. § 112

Claims 8-14 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point and distinctly claim the subject matter which Applicant regards as the invention. By this amendment, Applicants have amended claim 8 for clarity in an effort to overcome this rejection. Withdrawal of the rejection is kindly requested.

REJECTION UNDER 35 U.S.C. § 102

Claims 1, 2, and 5 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Tsujimura, et al. (U.S. Pat. No. 5,464,500), 'Tsujimura'. This rejection is respectfully traversed, and is further inapplicable to new claims 15-29 as set forth below.

Applicants respectfully submit that Tsujimura fails to teach or suggest a method of forming a film with a tapered edge in an electronic device, comprising, at least: etching the first and second films using the etching mask to form a resultant film having a tapered edge, wherein the tapered edge is formed at a desired angle of taper that is based a ratio of relative etch rates of the first and second films; as recited in independent claim 1.

The Examiner already admits that Tsujimura does not teach of forming a tapered edge at a desired angle of taper that is based on "relative etch rates of the first and second films". Yet the examiner relies on Lin. With regard to Lin, all that is recited is that "the etching solution is selected in accordance with the etching rate of the two metal layers 12a and 12b, typically in a range between 2 and 5. (see paragraph [0015], lines 8-9 of Lin) The range between 2 and 5 refers to an etching selectivity of a solution, not to a ratio of relative etch rates of the first and second metal films. Applicants kindly submit that claim 1 is allowable at least for the above reason. Withdrawal of the rejection is kindly requested.

Various ones of the dependent claims make the distinctions over the combination even more apparent. New claim 15 recites that the desired angle of taper is additionally based on chemical compositions of a selected etch bath used for said etching. Nothing in Tsujimura or Lin teaches or suggests the forming of a desired angle taper based on the chemical compositions of a selected etch bath. Tsujimura is silent as to this feature. All that is known in Lin is that an etching solution used comprises H₃PO₄, HNO₃, or CH₃COH, to achieve a taper angle of about 7.5° (see paragraph [0016]). Accordingly, Lin does not make up for the deficiencies noted above with regard to Tsujimura, in that no teaching of forming a desired taper angle based on both the selection of components of the etch bath and a ratio of relative etch rates of two films is shown in Lin. Therefore, Applicants kindly submit that claim 15 is allowable at least for the above additional reason. Withdrawal of the rejection is kindly requested.

REJECTIONS UNDER 35 U.S.C. § 103

(a) Claims 4 and 6 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Tsujimura, et al. (U.S. Pat. No. 5,464,500) in view of Lin, et al. (U.S. Pat. Application Publication No. 2002/0197875), 'Lin'. This rejection is respectfully traversed, and is further inapplicable to new claims 15-29 as set forth below.

As to claim 6, this claim has been canceled thus the rejection is now moot. Applicants submit that claim 4 is allowable at least for the reasons set forth above regarding claim 1. Withdrawal of the rejection is kindly requested.

(b) Claims 3, 7, 8-10, 12, and 14 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Tsujimura, et al. (U.S. Pat. No. 5,464,500) in view of Krishnaswamy, et al. (U.S. Pat. No. 5,185,589), 'Krishnaswamy'. This rejection is respectfully traversed, and is further inapplicable to new claims 15-29 as set forth below.

Regarding claim 8, Applicants respectfully submit that neither Tsujimura nor Krishnaswamy teach or suggest a method of forming a thin film resonator device comprising, at least: etching the first and second films using the etching mask to form the bottom electrode with a tapered edge, wherein the tapered edge is formed at a

desired angle of taper that is based on a ratio of relative etch rates of the first and second films. Accordingly, for at least the reasons set forth above regarding independent claim 1, applicants submit that claim 8 defines over Tsujimura and Krishnaswamy.

Further, with regard to Fig. 1a and Fig. 2a in Krishnaswamy, these figures explicitly shows the problems with the prior art, in which electrodes are formed with jointed or near-vertical steps as shown in each of prior art Fig. 1a and Fig. 2b of Krishnaswamy. Accordingly, deposition of a material such as the piezoelectric 25 and 26, for example in Fig. 2b would cause a film fracturing or discontinuity in the piezoelectric film, possibly leading to electrical discontinuities. This problem is solved by the present invention as recited in claim 8. For at least this additional reason, the rejection fails.

Notwithstanding the reasons set forth above, Tsujimura is not relevant, as related to independent claim 8, because independent claim 8 is directed to a method of forming a thin film resonator device, not merely an electrical device. Tsujimura is directed to forming a thin film transistor (TFT) for a liquid crystal display that might be used in a PDA (personal display assistant) or other suitable device employing an LCD, for example. Accordingly, as to claim 8, applicants submit that Tsujimura is non-analogous art, and is therefore deficient for at least this additional reason.

Applicants submit that claims 3, 7, 9, 10, 12, and 14 are allowable at least for the reasons set forth above regarding claims 1 and 8. As to these claims, withdrawal of the rejection is kindly requested.

(c) Claims 11 and 13 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Tsujimura, et al. (U.S. Pat. No. 5,464,500) in view of Krishnaswamy, et al. (U.S. Pat. No. 5,185,589), and in further view of Lin, et al. (U.S. Pat. Application Publication No. 2002/0197875). This rejection is respectfully traversed, and is further inapplicable to new claims 15-29 as set forth below.

As to claim 13, this claim has been canceled; thus the rejection is now moot. Applicants submit that claim 11 is allowable at least for the reasons set forth above regarding claim 8. Withdrawal of the rejection is kindly requested.

NEW CLAIMS

New claims 15-29 have been added in an effort to provide further protection for Applicants invention. Applicant submits that new claims 15-29 are allowable at least for reasons somewhat similar to those set forth above regarding claims 1 and 8, and/or for the further features claimed therein.

CONCLUSION

Accordingly, in view of the above amendments and remarks, reconsideration of the objections and rejections and allowance of each of claims 1-5, 7-12 and 14-29 in connection with the present application is earnestly solicited.

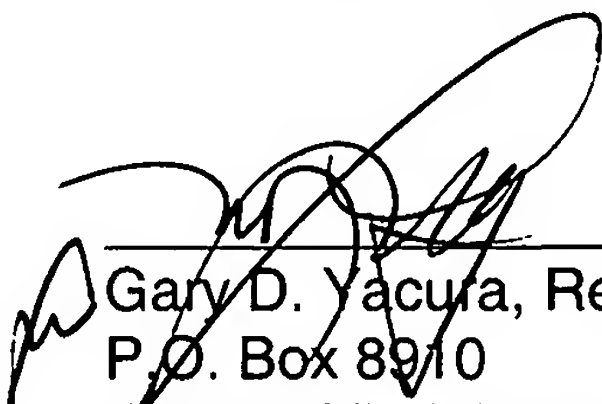
Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Matthew J. Lattig, Reg. No. 45,274 at the telephone number of the undersigned below.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 08-0750 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Respectfully submitted,

HARNESS, DICKEY, & PIERCE, P.L.C.

By

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Gary D. Yacura, Reg. No. 35,416
P.O. Box 8910
Reston, Virginia 20195
(703) 668-8000

GDY/MJL